

LIST OF THE NORTH AMERICAN PLATYPTERICES, ATTACI,
HEMILEUCINI, CERATOCAMPADÆ, LACHNEIDES, TEREDI-
NES AND HEPIALI, WITH NOTES

BY AUG. R. GROTE.

(Read before the American Philosophical Society, Nov. 20th, 1874.)

In this list, I present the results of my studies on a portion of the North American Bombyces. The admirable synopsis of the Family by Dr. Packard, I have found our best authority on the subject, while I have been able to propose many necessary and important changes in nomenclature from more extended bibliographical researches. The only changes from Dr. Packard's classification here made, are the division of the "Hepiali" into two groups, in which I follow Hübner, and the disintegration of the "Ceratocampadæ" into Hemileucini and Ceratocampadæ indicated by Mr. Robinson and myself in 1866. To Mr. S. H. Scudder we owe the reprinting of the Tentamen of Hübner and, more recently, the discovery of the exact date* (1806) of that valuable document.

In the present List, a star (*) is prefixed where the genus is represented in Europe; a dagger (†) where I have been unable to examine the species myself.

Bombyces Linn. (1788). *Bombyces* Borkh., 1793; *Bombyces* Hübner., 1806; *Bombycites* and *Noctuo-Bombycites* Latr., 1810; *Phalaenæ* Hübner., 1816.

PLATYPTERICES Hübner (1806).

Platyptericidæ Stephens, 1829; *Platypteryginæ* Grote, 1868.

* PLATYPTERYX Laspeyres (1802).

Type: *Bombyx hamula* S. V.

NOTE.—Hübner, in his Tentamen, first restricts Laspeyre's generic term to this type. Since Schrank's genus *Drepana* (1801), contains species not congeneric with this type, his name, while earlier, must be used for one of these, and Hübner's restriction of Laspeyre's later term must be respected according to the rules of Zoological nomenclature. This restores my original determination (1862) for our American species. Stephens' "*Drepana fasciata*," is probably a species of *Drepanodes*, from the description.

siculifer (Pack.), 4th Ann Rep. Peab. Acad. Sci., 87 (*Drepana*); *id.* Stretch, Zyg. Bomb. N. Am., 110, Pl. 4, fig. 11. California.

arcuata (Walk.), C. B. M., 5, 1164 (*Drepana*); *Platypteryx arcuata* Grote, Proc. Acad. N. Sci. Phila., 1862, p. 360; *Plat. fabula* Grote, l. c., p. 59. Canada to Middle States.

genicula (Grote), Proc. Acad. N. Sci. Phila., 1862, p. 59. Canada to Middle States.

* See Hübner, Zutr., 1. S. 4.

* PRIONIA Hübner (1816).

Type : *Phalæna lacertinaria* Linn.

bilineata (Pack.), Proc. Ent. Soc. Phila., 3, 376 (*Edapteryx*) Pl. 6, fig. 9. Eastern and Middle States.

NOTE.—Stephens' later restriction of *Platypteryx* for this genus cannot be followed. Möschler, from figures, regards our species as identical with the European. Stett. Ent. Zeit., 251, 1871.

DRYOPTERIS Grote (1862).

Type : *Platypteryx formula* Grote.

rosea (Walk.), C. B. M., 5, 1164 (*Drepana*); *Drepana marginata* Walk., l. c., 1165; *Cilix Americana* H. S., Lep. Exot., 470; *Platypteryx formula* Grote, Proc. Acad. N. Sci., Phila., 1862, 60; *Dryopteris rosea* Grote, l. c., 360. Canada to Virginia.

irrorata Pack., Proc. Ent. Soc., Phila., 3, 377. Eastern States.

ATTACI Linn. (1788).

NOTE.—This sub-family is indicated by Linné under the name "Attacos," Ed. xiii, Syst. Nat., p. 2401. *Echidnæ* Hübn., and *Herææ* Hübn., must both be considered synonymous. The type of *Echidna* (1806), is *E. Tau*; the type of *Heræa* (1806), is *H. Carpini*.

ACTIAS Leach (1815).

Type : *Phalæna Luna* Linn.

Luna (Linn.), Syst. Nat. Ed. 10, 1, 496, No. 5 (1758); id. Ed. 12, 810, No. 5 (1767); id. Mus. Ulr., 368, No. 5 (1764); Abb. & Sm. Ins. Ga., 1, 95, T. 48; Leach, Edin. Encyc., 9 (1815), (*Actias*); Hübn., Verz., 152, No. 1587 (*Tropæa*). Canada to Alabama; double brooded in Alabama, where it readily flies in the day time.

NOTE.—The Plate of this species Band 2, Exot. Schm., is wrongly dated "1806" by Packard. It is later than the Verzeichniss. In a letter dated 29th Sept., 1866, Dr. Herrich-Schæffer gave the following dates to the 3d vol. of the Sammlung; "*Casiphona* to *huntera*, 1828; *Asclepias* to *rustica*, 1829; *Io* to *taygete*, 1830; *pasithæ*, *grimmia*, 1831; *crista* to *beltrao*, 1832; *nesea* to *thirza*, 1833; *debora-hylas*, 1834; *lusca-huebneri*, 1835."

TELEA Hübn. (1816).

Type : *Bombyx polyphemus* Cramer.

Polyphemus (Cram.), 1, Pl. 5, A. B.; Fabr., Sp. Ins., 2, 168, No. 5; Mant., 2, 108, No. 6; Linn., Syst. Nat. Ed., 13, p. 2402, No. 461; Fabr., Syst. Ent., 410, No. 8; Abb. & Sm., 93, T. 47; *Telea polyphemus* Hübn., Verz., 154, No. 1610; *Bombyx Paphia*† Linn., Mus. Ulr. (1764), p. 369, No. 4, (not S. N. 10, 1758, see Am. Naturalist); *Telea Paphia* Kirby, Trans. R. Dub. Soc., 203 (1872). Canada to Mexico; California.

ATTACUS Linné.

Type : *Attacus Atlas* Linné.

† *splendidus* (De Beauv.), His. Afr. Am., 133, Pl. 22, fig. 1, 2 (*Bombix*); Clem., Proc. Acad. N. S., Phila. (1860), p. 160, (*Attacus*). Texas.

PHILOSAMIA Grote (1874).

Type: *Phalæna Cynthia Drury*.

NOTE.—Mr. W. F. Kirby, has drawn attention to the fact that after Walker's restriction of the genus *Samia*, in 1855, to *cecropia* and *promethea*, the term could not be used again for Hübner's *Samia cynthia*. The term *Platysamia* must then be dropped and a new name be used for the present genus, hitherto confounded with *Attacus*, and described by me in 1865 under the name *Samia*. To *Philosamia* belong the Asiatic species, *lunula*, *ricini*, *Cumingii* and *Guerini*.

Cynthia (Drury), Ill., 2, 10, Pl. 6, fig. 2; Hübn., Verz., p. 156, No. 1629 (*Samia*); Grote, Proc. Ent. Soc., Phila., 5, 228 (*Samia*).

NOTE.—With the usual latitude for coarseness and infidelity of coloring, I think Cramer's figures under this name represent the same species.

Brooklyn, L. I.; Philadelphia; Baltimore. Introduced and apparently acclimated with us.

CALLOSAMIA Packard (1864).

Type: *Bombyx Promethea Drury*.

Promethea (Drury), Ill. 2, Pl. 12, fig. 1. 2, ♀; Abb. & Smith, His. Ga., 91, T. 46; *Samia Promethea* Hübn., Verz., p. 156, No. 1631; *Callosamia Promethea* Pack., Proc. Ent. Soc., Phila., 3, 379. Canada to Alabama.

NOTE.—In the original perfect copies of Drury, an Index, with names according to the Linnean system, is given at the end of each volume.

angulifera (Walk.), C. B. M., 5, 1224 (*Samia*); Pack., Proc. Ent. Soc., Phila., 3, 380 (*Callosamia*). New York; Pennsylvania.

SAMIA Hübner (1816).

Type: *Phalæna Cecropia Linn.*

Cecropia (Linn.), Syst. Nat. Ed. 10, 1, 496, No. 3; *id.* Ed. 12, 809, No. 3; Mus. Ulr., 368, No. 3; Abb. & Sm., His. Ga., 89, T. 45; *Samia Cecropia* Hübn., Verzeich., 156, No. 1630; *Platysamia Cecropia* Grote, Proc. Ent. Soc., Phila., 5, 229. Canada to Alabama.

† *Columbia* (S. I. Smith), Proc. Bost. Soc. N. Hist., 9, 343. Canada; Eastern States.

† *Gloveri* (Strecker), Lep. Rhop. Het., No. 1, Plate (*Platysamia*). Arizona.

Californica (Grote), Proc. Ent. Soc., Phila., 5, 229 (*Platysamia*); W. F. Kirby, Proc. Roy. Dub. Soc., 1872, 202 (*Samia*); " *Saturnia ceanothi*, Beer," Boisd. Ann. Soc. Ent. Belg., 12, 83.

NOTE.—No description of this species under the names " *Euryalus*" or " *ceanothi*" is known to us previous to Dec., 1865, the date of its description as *Californica*.

California.

* *SATURNIA* Schrank (1801).

Type: *Phalæna pavonia major Linn.*

† *Galbina* Clem., Proc. Acad. N. S., Phila., 1860, p. 156. Texas.

HEMILEUCINI Grote and Robinson (1866).

NOTE.—This group, which we would consider as of sub-family value, is discussed in Ann. Lyc. Nat. Hist., N. Y., 8, pp. 377, 378. None of the collective names proposed by Hübner can be used. The group is not recognized in the Tentamen (1806); in the Verzeichniss some of the genera are referred to the *Echidnæ*, and one to the *Herææ*, names explained above under *Attaci*.

AUTOMERIS Hübn. (1816).

Type: *Bombyx Janus Cramer*.

Io (Fabr.), Ent. Syst. p. 419, No. 37; Abb. & Sm., Ins. Ga., p. 97, T. 49; Harr. Cat. Ins., Mass. (*Saturnia*); Hübn., Samm. Exot. Sch., 3, figs. 1, 2, ♂, 3, 4, ♀ (*Hyperchiria*); *Hyp. varia* Walk., C. B. M., 6, p. 1278. Canada to Southern States.

NOTE.—This generic term has priority in the Verzeichniss. Cramer's figures under this specific name cannot, by themselves, constitute a valid priority.

Zelleri (G. & R.), Trans. Am. Ent. Soc., Phila., 2, Pl. 2, fig. 65 (*Hyperchiria*). Texas.

COLORADIA Blake (1863).

Type: *Coloradia Pandora Blake*.

NOTE.—This genus is distinct from *Dirphia Hübn.* (1816), the type of which is *D. Tarquinius Cram.*

Pandora Blake, Proc. Ent. Soc., Phila., 2, 279, Pl. 7. Colorado Territory.

PSEUDOHAZIS G. & R (1866).

Type: *Saturnia eglanterina Bois.*

NOTE.—Dr. Packard's genus *Eucronia* is founded on *H. maja*, which we have shown to be Walker's type of *Hemileuca*. In an opposite view, the validity of the present generic name cannot be disputed until it is satisfactorily shown that the South American *H. venosa* Walk., is congeneric.

Hera (Harr.), Rep. Ins. Inj., Mass., 286, 1841 (*Saturnia*); *Saturnia eglanterina* Bois., Ann. Soc. Ent. Fr. 2 Ser., 10, 323; *Telea eglanterina* H.-S., Exot., 60, 445; *Pseudohazis Hera* G. & R., Ann. Lyc. N. Hist., N. Y., 8, 377. California; Rocky Mountains.

HEMILEUCA Walk (1855).

Type: *Phalæna Maja Drury*.

Maja (Drury), Ill. 2, 42, Pl. 24, fig. 3; *Bombyx Proserpina* Fabr., Ent. Syst., 561, No. 17; *id.* Abb. & Sm., Ins. Ga., Pl. 50; Walk., C. B. M., 6, 1317 (*Hemileuca*). Mass. to Georgia, Westward to Illinois.

† *Nevadensis* Stretch, Zyg. Bomb. N. Am., 108, Pl. 4, fig. 10. Nevada.

Grotei Hopffer, Trans. Am. Ent. Soc., 2, 192, Pl. 2, fig. 60. Texas.

† *Juno* Pack., 4th Ann. Rep. Peab. Acad. Sci., 87. Arizona.

† *pica* Walk., C. B. M., 6, 1318 (*Hemileuca*); G. & R., Trans. Am. Ent. Soc., 2, 74 (*Pseudohazis*). "United States."

EULEUCOPHÆUS Pack. (1872).

Type : *Euleuc. tricolor* Pack.

tricolor Pack., 4th Ann. Rep. Peab. Acad. Sci., 89 ; Stretch, Zyg. Bomb. N. Am., 143, Pl. 6, figs. 3, 4. New Mexico.

CERATOCAMPADÆ Harris (1841).

NOTE.—This appears to be the earliest collective term that can be used for this group. The genera are partly referred by Hübn. in 1816, to his *Echidnæ* (see *ante*), and partly to his *Trichodæ*. The type of *Trichoda* (1806) is, however, a Lachneid, a designation which has the priority by a line in 1806.

EACLES Hübn. (1816).

Type : *Bombyx imperialis* Drury.

imperialis (Drury), 1, 17, Pl. 9, figs. 1, 2 ; *Phalæna imperatoria* Abb. & Sm., Ins. Ga., 109, T. 55 ; Hübn., Verz., 153, No. 1602 (*Eacles*) ; *Bombyx didyma* De Beauv., Ins. Afr. Am., pp. 51, 52, Pl. 20, figs. 1, 2 (1806). Eastern States, Southward. Appears to be replaced in Brazil by *E. magnifica* Walk.

CITHERONIA Hübn. (1816).

Type : *Bombyx regalis* Fabr.

regalis (Fabr.), Syst. Ent., 436, No. 93 ; *Phalæna regia* Abb. & Sm., 2, 121, Pl. 61 ; Hübn., Verz., 153, No. 1599 (*Citheronia*) ; *Phalæna Laocoon* † Stoll (*nec Cramer*) Supp. pp. 179, 180, Pl. 42, fig. 2, ♂ ; *Eacles Laocoon*, Walk., C. B. M., 6, 1732. Massachusetts to Georgia. Appears to be replaced in Mexico by *C. mexicana* G. & R.

supuleralis G. & R., Proc. Ent. Soc., Phila., 4, p. 222 ; Ann. Lyc. N. H., N. Y., 8, p. 382, Pl. 12, figs. 2, 3. Massachusetts to Georgia. This species is represented on one of Abbot's unpublished Plates in the British Museum Collection.

SPHINGICAMPA Walsh (1864).

Type : *Sphingicampa distigma* Walsh.

bicolor (Harr.), Rep. Ins. Inj. Veg., Mass., 203 (1841) *Dryocampa* ; Walsh, Proc. Bost. Soc. N. Hist., 1864, p. 293 ♀ ; *Sphingicampa distigma*, Walsh, l. c. p. 290 ♀ ♂ ; *Sphing. bicolor* Grote, Soc. Ent. Belg. Comptes Rendus (1874). North Carolina ; Illinois ; New York.

ANISOTA Hübn. (1816).

Type : *Bombyx stigma* Fabr.

stigma (Fabr.), Ent. Syst., 424, No. 54 ; Abb. & Sm., Ins. Ga., 111, T. 56 ; Hübn., Verzeichniss, 193, No. 1978 (*Anisota*) ; Grote, Proc. Ent. Soc., Phila., 3, 93 (*Anisota*). Massachusetts to Georgia.

senatoria (Abb. & Sm.), Ins. Ga., 113, T. 57 ; Hübn., Verz., 193, No. 1979 (*Anisota*) ; Harr., Rep. Ins. Mass., 3d Ed., 406, figs. 199, 200 (*Dryocampa*) ; Grote, Proc. Ent. Soc., Phila., 3, 93 (*Anisota*). Canada to Georgia.

Virginiensis (Drury), Ill., 2, 23, Pl. 13, fig. 2, (*Bombyx*); *Phalena pellucida* Abb. & Sm., Ins. Ga., 115, T. 58; *Anisota virginiensis* Pack., Proc. Ent. Soc., Phila., 3, 385. Massachusetts to Georgia.

DRYOCAMPA Harris (1835).

Type: *Bombyx rubicunda* Fabr.

rubicunda (Fabr.), Ent. Syst., 429, No. 69; Harr. Cat. Ins., Mass. 72, (*Dryocampa*); Rep. Ins. Inj. Veg. Mass., 3d Ed., 408, fig. 201. Canada to Virginia.

var. *alba* Grote, Bull. Buff. S. N. S., 2, 153. Kansas.

LACHNEIDES Hübn. (1806).

[*Bombycidae* Stephens (p.), 1829.]

[*Lasiocampidae* Duponchel (p.), 1846.]

NOTE.—The adoption of this name by Dr. Packard in 1868, must now be followed. It is the earliest title for any part of the sub-family that we are able to find. The type of the genus *Lachneis* is the European *Lachneis Catax*.

GLOVERIA Pack. (1872).

Type: *Gloveria Arizonensis* Pack.

† *Arizonensis* Pack., 4th Rep. Peab. Acad. Sci., p. 90 (1872). Arizona.

* *EUTRICHA* Hübner (1806).

Type: *Bombyx quercifolia* Linn.

Americana (Harr.), Rt. Ins. Inj. Veg., p. 273; *id.* 3d Ed., p. 377, fig. 176 (*Gastropacha*). Maine to Pennsylvania.

† *ferruginea* (Pack.), Proc. Ent. Soc., Phila., 3, p. 386 (*Gastropacha*). Michigan.

† *carpinifolia* (Boisd.), Ann. Soc. Ent. Belg., 12, p. 83 (*Lasiocampa*). California.

† *Californica* (Pack.), 4th Rep. Peab. Acad. Sci., p. 91 (*Gastropacha*). South California.

† *Mildei* (Stretch), Zyg. and Bomb. N. A., p. 113, Plate 4, fig. 12 (*Gastropacha*). California.

NOTE.—The American species seem to need revision. Dr. Packard informs me that the memoir in which "*alascensis*" was described is no longer extant, the edition having been destroyed in the great fire at Chicago.

* *TRICHODA* Hübner (1806).

Type: *Bombyx neustria* Linn.

Americana (Fabr.), Ent. Syst., 3, p. 433, No. 81; Harris Rep. Ins. Inj. Veg., p. 269 (*Clisiocampa*); *id.* 3d Ed., Pl. 7, figs. 13, 17; *Cl. decipiens*, Walk., C. B. M., 6, 1488; *castrensis* † Abb. & Sm., p. 119, T. 6); *Bombyx frutetorum* Boisd., Ann. S. E. Belg., 12, 82. Canada to Georgia.

disstria (Hübner), Verz., p. 192, No. 1975 (*Mulacosoma*); *neustria* † Abb. & Sm., p. 117, T. 59; *Clisiocampa silvatica* Harr., Cat. Ins. Mass., 72; Rep. Ins. Inj. Veg., 271; *id.* 3d Ed., p. 376, Pl. 7, fig. 18, 19; *Bombyx drupacearum* Boisd., Ann. Soc. Ent. Belg., 12, p. 82. Canada to Georgia.

Californica (Pack.), Proc. Ent. Soc., Phila., 3, p. 387 (*Clisiocampa*); *Bombyx pseudoneustria* Boisd., Ann. Soc. Ent. Belg., 12, 82. California.

ARTACE Walk. (1855).

Type: *Artace punctistriga* Walk.

punctistriga Walk., C. B. M., 7, p. 1491. New York to Georgia.

TOLYPE Hübner (1816).

Type: *Bombyx Velleda* Stoll.

Velleda (Stoll), Supp. Cram., p. 178, Pl. 41, fig. 4; Hübner, Verz., S. 189, No. 1943 (*Tolype*). Canada to Georgia.

Laricis (Fitch), 2d N. Y. Rep. p. 262, Pl. 2, fig. 5 ♂, 6 ♀ (*Planosa*). *Gastr. minuta* Grote, Proc. Ent. Soc., Phila., 2, p. 433 ♂.

NOTE.—Fitch's description and figure of the ♂ were probably taken from rubbed specimens.

HETEROPACHA Harvey (1874).

Type: *Heteropacha Rileyana* Harvey.

Rileyana Harvey, Bull. Buff. Soc., N. S., 1, p. 262, Pl. 11, fig. 1. Missouri; Texas (Boll. in M. C. Z. Cam.).

NOTE.—Dr. Harvey's type is somewhat rubbed. Fresh specimens show the fringes distinctly chequered, fuscous and whitish. On the forewings the median space is darker, confined by dark lines indistinctly edged with whitish. Terminally the wing is more whitish, showing the subterminal spots plainly.

TEREDINES Hübner (1806).

[*Cossides* Herr. - Sch., 1845.]

NOTE.—This and the following group are equivalent to the "*fodicantes*" of Hübner (1806). We would consider them of equal value. The European *T. Cossus* (Linn.) is made the type of the genus *Teredo*, by Hübner, in the Tentamen. In v. Heineman's extremely unsatisfactory arrangement of the Bombycees, the genus *Limacodes* is associated with this group.

XYSTUS Grote (1874).

Type: *Cossus robiniae* Peck.

NOTE.—The name *Xyleutes* of Hübaer, cannot be used for this genus, for the reason that it is originally applied to none of the species; in the Verzeichniss it appears to be used instead of *Terele* (Tentamen) for the European *Teredo cossus* (Linn.). Gr.: ξυστός.

Robiniae (Peck), Mass. Ag. Rep. Journ., 5, 67 (1818), Plate (*Cossus*); *Harris*, Rt. Ins. Inj. Veg., Mass., 297 (*Xyleutes*); H.-S., Lep. Ex., figs. 170, 171. Canada; Eastern and Middle States; California?

† *crepera* (Harr.), Cat. Ins., Mass., p. 72 (*Cossus*); *Xyleutes crepera* Pack., Proc. Ent. Soc., Phila., 3, p. 388. Massachusetts.

† *querciperda* (Fitch), 5th Rep. Nox. Ins., N. Y., p. 10 (*Cossus*); Pack., Proc. Ent. Soc., Phila., 3, p. 389 (*Xyleutes*). New York.

† *Mac Murtrei* (Boisd.), Icon. Règne. An., Pl. 85, fig. 2 (*Cossus*); *Cossus plagiatus* Walk., Cat. B. M., 7, p. 1515. United States.

† *Populi* (Walk.), C. B. M., 7, p. 1515 (*Cossus*); Pack., Proc. Ent. Soc. Phila., 3, 389 (*Xyleutes*). Hudson's Bay Territory.

NOTE.—A single species is known from Cuba, *Xystus piger* (Grote), Proc. Ent. Soc. Phila., 5, 254 (*Xyleutes*).

* ZEUZERA Latreille (1805).

Type : *Bombyx æsculi* Linn.

† *pyrina* (Fabr.), Ent. Syst., 3, p. 5, No. 6 (*Cossus*); Walk., C. B. M., 7, p. 1530 (*Zeuzera*). North America.

† *Canadensis* H.-S., Lep. Exot. Sp. N. aut In., S. 58, fig. 168; Walk., C. B. M., 7, 1530. Canada (Quebec).

HEPIALI Linn. (1788).

[*Hepioli* Hübner, 1806.]

NOTE.—This sub-family is indicated by Linné, under the name "Hepialæ," Ed. xiii. Syst. Nat., p. 2402.

* HEPIALUS Fabr. (1793).

Type : *Noctua humuli* Linn.

NOTE.—The type of this genus is the European *humuli*, indicated by Hübner in the Tentamen, 1806. Following Dr. Packard's remarks, our species, though occasionally of increased size, do not differ generically.

argenteomaculatus Harr., Cat. Ins., Mass., p. 72; Rep. Ins. Inj. Veg., p. 295; *id.* 3d Ed., p. 410, *partim*. Non alior. Eastern States; Catskill Mts. (Mead.); Pennsylvania (Coll. Am. Ent. Soc., Phila.)

NOTE.—This and the following species have been confounded by Harris and Packard.

quadrigattatus (Grote), Proc. Ent. Soc., Phila., 3, p. 73, Pl. 1, fig. 6 (*Gorgopis*); *Hep. arg.* † Harris, Agassiz, Lake Superior, 389, Pl. 7, fig. 6; *id.* Rep. Ins. Inj. Veg., 3d Ed., p. 410 (foot note), fig. 202; *id.* Walk., *var.* C. B. M., 7, 1556; *Sthenopis arg.* † Pack., Proc. E. S., Phila., 3, 392. Great Slave Lake; Lake Superior; Quebec (Bélanger); Saskatchewan.

NOTE.—This is a larger, more pinkish, salmon-colored species, with smaller dots.

† *purpurascens* (Pack.), Journ. Bost. Soc. Nat. Hist., p. 598 (*Gorgopis*); Pack., Proc. Ent. Soc., Phila., 3, p. 392 (*Sthenopis*). White Mountains, N. Hamp.

† *argentatus* (Pack.), Proc. Ent. Soc., Phila., 3, 392 (*Sthenopis*). Massachusetts.

NOTE.—This is perhaps the true *H. argenteomaculatus*, as separated by myself. Harris first notices apply to an Eastern species.

† *Behrensii* (Stretch), Zyg. Bomb. N. A., 1, 105, Pl. 4, fig. 6 (*Sthenopis*). California.

† *montanus* (Stretch), Zyg. Bomb. N. A., 1, 105, Pl. 4, fig. 7 (*Sthenopis*). California, (Sierra Nevada).

hyperboreus Mösch., W. E. M., 6, 129 (*Epiabus*), Taf. 1, fig. 1; *Hep. pulcher* Grote, Proc. Ent. Soc., Phila., 3, p. 522, Pl. 5, fig. 3. Labrador; Colorado Territory.

† *Labradoriensis* Pack., Proc. Ent. Soc., Phila., 3, p. 394. Labrador.

† *mustelinus* Pack., Proc. Ent. Soc., Phila., 3, 393. Eastern States.

gracilis Grote, Proc. Ent. Soc., Phila., 3, p. 522, Pl. 5, fig. 4. Quebec.

† *Californicus* Boisd., Ann. Soc. Ent. Belg., 12, p. 85. California.

† *hectoides* Boisd., Ann. Soc. Ent. Belg., 12, p. 85. California.

RESULTS OF AN EXAMINATION OF AN EXPLODED LOCOMOTIVE BOILER, AND OF EXPERIMENTS TO ASCERTAIN THE CAUSES OF EXPLOSION.

BY DR. CHARLES M. CRESSON.

(Read before the American Philosophical Society, July 17, 1874.)

The boiler was constructed of No. 1 ($\frac{5}{16}$) boiler iron, single riveted (with the exception of the junction of the waist with the fire-box, which was double riveted); it was of the ordinary locomotive form with enlarged grate surface adapting it for use with Anthracite fuel.

The fire-box had the ordinary flat crown sheet suspended from wrought iron girders by means of bolts $\frac{3}{4}$ in. in diameter, placed $4\frac{1}{2}$ in. apart, the ends of the girders being supported upon the vertical sides of the fire-box. The vertical sheets of the fire-box were stayed by wrought iron bolts $\frac{7}{8}$ in. in diameter, placed 4 in. apart, screwed into the sheets and riveted at the end.

The crown sheet and that part of the boiler directly over the fire-box were connected by stay-rods.

The engine had been run upon a siding to pull out a train of cars, which train being heavier than was ordinarily pulled, the steam-blower was applied for the purpose of increasing the intensity of the fire and generating steam of a higher pressure than was usually employed. But when preparations for starting were completed, it was found, upon refer-